

IN THE CLAIMS

Please amend the claims as follows:

Claims 1-3 (Canceled).

Claim 4 (Currently Amended): The microprocessor of claim [[13]] 14, further comprising:

an instruction decryption processing unit configured to decrypt the encrypted instructions of the program read out from the external memory, by using the instruction key registered in correspondence to the ~~specific~~ program identifier by the key management unit, according to a chain information indicating chain relationships among encryption blocks in units of which the encrypted instructions are encrypted.

Claim 5 (Currently Amended): The microprocessor of claim [[13]] 14, wherein the key management unit is also configured to register a data key to be used in encrypting/decrypting data for the program in correspondence to the ~~specific~~ program identifier into the key table.

Claim 6 (Original): The microprocessor of claim 5, wherein the key table stores a plurality of instruction keys or data keys which are indexed by key value indexes, and the microprocessor further comprises:

a key index conversion unit configured to convert a set of a program identifier and a key type identifier received from the processor core into a corresponding key value index;  
and

a decryption processing unit configured to decrypt encrypted instructions or data of a program specified by the program identifier received from the processor core and read out

from the external memory, by using an instruction key or a data key indexed by the corresponding key value index obtained by the key index conversion unit.

Claim 7 (Previously Presented): The microprocessor of claim 6, wherein the key index conversion unit converts more than one set of a program identifier and a key type identifier into an identical key value index.

Claim 8 (Original): The microprocessor of claim 6, further comprising:  
a cache memory configured to store a part of instructions or data of programs by using key value indexes obtained by the key index conversion unit as cache tags.

Claim 9 (Currently Amended): The microprocessor of claim ~~[[13]]~~ 14, wherein the key management unit is also configured to register a context key to be used in encrypting/decrypting context for the program in correspondence to the ~~specific~~ program identifier into the key table.

Claim 10 (Canceled).

Claim 11 (Withdrawn): A microprocessor internally having a secret key specific to the microprocessor that cannot be read out to an external device, the microprocessor comprising:

a processor core configured to execute instructions of a program including plaintext instructions and encrypted instructions and to particularly execute a key registration instruction in which a registration request is issued, the encrypted instructions being encrypted by using an instruction key specific to the program; and

a key management unit configured to, when receiving the registration request, carry out a key registration in which a distribution key that is obtained in advance by encrypting the instruction key and a feedback key integrally by using a public key corresponding to the secret key is read out from an external memory, the distribution key is decrypted by using the secret key to obtain the instruction key and the feedback key, and the instruction key and the feedback key are registered in correspondence to a specific program identifier for identifying the program into a key table,

wherein the feedback key is used in obtaining a feedback information by encrypting the instruction key when the feedback information is to be written into the external memory at a time of a context saving.

Claim 12 (Withdrawn): A microprocessor internally having a secret key specific to the microprocessor that cannot be read out to an external device, the microprocessor comprising:

a processor core configured to execute instructions of a program including plaintext instructions and encrypted instructions and to particularly execute a key registration instruction in which a registration request is issued, the encrypted instructions being encrypted by using an instruction key specific to the program; and

a key management unit configured to, when receiving the registration request, carry out a key registration in which a distribution key that is obtained in advance by encrypting the instruction key and a perpetuation flag integrally by using a public key corresponding to the secret key is read out from an external memory, the distribution key is decrypted by using the secret key to obtain the instruction key and the perpetuation flag, and the instruction key and the perpetuation flag are registered in correspondence to a specific program identifier for identifying the program into a key table,

wherein the perpetuation flag indicates whether or not to permit a context saving in which the instruction key is encrypted by using a prescribed secret key of the microprocessor and written into the external memory.

Claim 13 (Canceled).

Claim 14 (New): A microprocessor internally having a secret key specific to the microprocessor that cannot be read out to an external device, the microprocessor comprising:

a processor core configured to execute a key registration instruction in which a registration request with an address of a distribution key of a program and a program identifier that identifies a program including plaintext instructions and encrypted instructions is issued, and to execute instructions of another program during a key registration based on the registration request, the distribution key being obtained in advance by encrypting an instruction key specific to the program by using a public key corresponding to the private key, the encrypted instructions being obtained by encrypting instructions by using the instruction key;

an instruction cache memory configured to store a cache line containing a part of instructions of a program in correspondence to a program identifier, and to permit reading of the cache line only when the program identifier stored in correspondence to the cache line coincides with a program identifier received along with a program reading request from the processor core; and

a key management unit configured to, when receiving the registration request with the address of the distribution key and the program identifier, carry out the key registration, wait for a completion of an invalidation of the cache line, to notify a completion of the key registration to the processor core asynchronously by interruption when the key registration

and the invalidation are both completed, the key registration being carried out by reading out the distribution key from an external memory based on the address thereof sent from the processor core, to decrypt the distribution key by using the secret key to obtain the instruction key, and to register into a key table the instruction key in correspondence to the program identifier sent from the processor core, the invalidation being carried out by invalidating the cache line stored in correspondence to the program identifier on the cache memory when the instruction key corresponding to the program identifier is registered in the key table,

wherein the processor core starts to execute the program with respect to the registration request by using the corresponding instruction key after receiving the notification of the completion of the key registration from the key management unit.